

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) An RF amplifier circuit comprising an RF amplifying device having
a first input terminal,
a second input terminal,
an output terminal,
means for applying to the first input terminal an input RF signal I to be amplified,
means for generating and applying to the second input terminal a threshold signal T, and
the RF amplifying device being operable to produce at the output terminal an output
signal O which has a high finite value providing a Boolean '1' value when the instantaneous
value of the amplitude of I is greater than the threshold signal T and a low finite value providing
a Boolean '0' value when the instantaneous value of the amplitude of the input RF signal I is less
than the threshold signal T, wherein pulse width of the output signal O is produced by the
threshold signal T being proportional to the amplitude of the input RF signal I, such that the
output signal O is pulse width modulated in accordance with the amplitude of the input RF signal
I, and
further wherein the threshold signal T applies a non-constant transfer function to a signal
representative of the input RF signal I and further wherein the threshold signal T is dynamically
varied in a manner adapted to linearize the relationship in at least part of its range between the
amplitude of the output signal O and the amplitude of the input RF signal I.
2. (canceled)
3. (previously presented) An RF amplifier circuit according to claim 1 which has a
bandwidth of at least five times greater than the mean operating frequency of the input RF I
signal which it is operable to amplify.

4. (previously presented) An RF amplifier circuit according to claim 1, wherein the output terminal is connected to a low pass filter operable to filter out harmonics higher than the first harmonic in the output signal O.

5. (previously presented) An RF amplifier circuit according to claim 1 wherein the threshold signal T is controlled to be a variable signal having a constant sign.

6. (previously presented) An RF amplifier circuit according to claim 1 wherein the threshold signal T is in operation dynamically varied as a function of the input RF signal I by sampling the input RF signal I prior to application to the amplifying device, the means for generating and applying to the second input terminal a the threshold signal T including a feed forward loop which includes means for deriving at least part of the threshold signal T from the input RF signal I.

7. (previously presented) An RF amplifier circuit according to claim 1 wherein the threshold signal T is dynamically varied as a function of the output signal O by sampling the output signal O produced by the amplifying device, and wherein the means for generating and applying to the second input terminal a the threshold signal T further comprises a feedback loop which derives a signal in part from the sampled output signal O.

8. (previously presented) An RF amplifier circuit according to claim 1 wherein the means for generating and applying to the second input terminal a threshold signal T is operable to produce from the input RF signal I a signal which is related to the an envelope of the sampled input RF signal I.

9. (currently amended) An RF amplifier circuit according to claim 1 wherein the means for generating and applying to the second input terminal a the threshold signal T includes further comprises a digital signal processor ~~operable to calculate~~ that calculates from modulation information applied to produce the input RF signal I a form of the input RF signal I.

10. (currently amended) An RF amplifier circuit according to claim 9 wherein the circuit further comprises a digital signal processor ~~operable to produce~~ that produces modulation information for use in modulation to form the input RF signal I and also to carry out calculations using the modulation information to derive at least part of the threshold signal T.
11. (previously presented) An RF amplifier circuit according to claim 1 wherein the means for generating and applying to the second input terminal a threshold signal T further comprises:
- a signal peak monitor which is operable to measure the a value of the a peak of a signal being sampled and produces a peak envelope signal,
 - an analogue to digital converter which is operable to digitise the peak envelope signal;
 - a digital signal processor which is operable to apply a transform function to the digitised peak envelope signal; and
 - a digital to analogue converter which is operable to convert the digitally transformed signal produced by the digital signal processor back into a waveform suitable for use as the threshold signal T.
12. (previously presented) An RF amplifier circuit according to claim 11 wherein the means for generating and applying to the second input terminal a threshold signal T further comprises an amplifier or a plurality of amplifiers to amplify the signal to produce a variable threshold signal T which is variable.
13. (previously presented) An RF amplifier circuit according to claim 11 wherein the means for generating and applying to the second input terminal a threshold signal T is operable to apply proportional, derivative and integral control to produce the threshold signal T.
14. (previously presented) An RF amplifier circuit according to claim 11 which stores corresponding values of the signal before and after application of the transfer function.
15. (previously presented) An RF amplifier circuit according to claim 1 which is such that a plot of amplitude of the output signal O against amplitude of the input RF signal I is linear over at least 90% of its range.

16. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifying device employed in the circuit is arranged in a class C configuration modified so that in operation the input RF signal I and the threshold signal T are applied together via separate input terminals to be combined at a single electrode of the amplifying device.
17. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifying device comprises a solid state amplifying device.
18. (previously presented) An RF amplifier circuit according to claim 1 wherein in operation the threshold signal T is applied as a variable bias to the amplifying device or is combined with the input RF signal I at an input to the amplifying device.
19. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit includes at least two amplifying devices mutually connected in series or in parallel.
20. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit is used in a communications transmitter.
21. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit is used in a mobile station or a base transceiver station.
22. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit is operable to employ phase modulated RF signals.
23. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit is incorporated in a mobile station or a base transceiver station for use in a mobile communications system operable according to TETRA standards.

24. (previously presented) An RF amplifier circuit according to claim 1 wherein the amplifier circuit is operable to provide a linear response in an output signal strength range of at least 70dB.